

No. X.—HYDREIONOCRINUS VERRUCOSUS N.SP., CARBONIFEROUS,
ISLE OF MAN. By Dr. F. A. BATHER, F.R.S.

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Diagnosis.—A *Hydreionocrinus* with cup depressed and bowl-shaped, flattened on posterior interradius, stem-facet depressed in IBB circlet, having plates equably curved and closely covered with fine pustules. With an interbrachial plate resting in a notch between the radials; in the post. IR. the corresponding notch is between anal x and l. post. R.

Horizon.—Middle Carboniferous, Poolvash Limestone (Upper *Dibunophyllum* zone, *vide* Wheelton Hind, 1907, p. 148, and 1909, p. 167).

Locality.—Poolvash Bay, Isle of Man.

Holotype.—A complete cup collected by Mr. James L. Begg, and presented by him to the Geological Department of the British Museum, registered E 21591.

Description of the unique Holotype.—Cup depressed and bowl-shaped. IBB not impressed, but slightly excavated for the stem-facet.

Cup-plates equable or very faintly tumid; sutures flush or almost imperceptibly depressed; surface with a uniform shagreen-like ornament of pustules, 3·5 or 4 in 1 mm. linear.

The sub-pentagonal outline and the regular slope of the sides of the cup are disturbed by the anal area, which is more flattened, *i.e.*, approaches the vertical more rapidly.

Antero-posterior diameter,	- - -	23·0 mm.
Transverse diameter,	- - -	26·0 mm.
Height from basal plane to fulcral ridge of		
RR.,	- - -	9·0 mm.
Diameter of stem-facet,	- - -	6·6 mm.
Depth of excavation of stem-facet,	circa	1·2 mm.
Distance of apex of IB. from margin of		
stem-facet,	- - -	2·0 mm.

IBB. form an almost regular pentagon, with sides normally straight.

BB. therefore pentagonal, except where modified by the anal area. Height, circa 6 mm.; greatest width, 8.2 mm. Post. B. hexagonal, its upper angle being truncated for the support of anal *x*: height, 8 mm.; greatest width, 9 mm.; r. post B. also hexagonal, but not bilaterally symmetrical, its sixth side being a short one which abuts against RA.

RR. approximately pentagonal, *i.e.*, shield-shaped, wide and low, with outer angles truncate, forming a short shoulder. Between these shoulders is a V-shaped notch with concave sides,

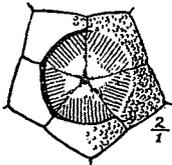


Fig. 1.

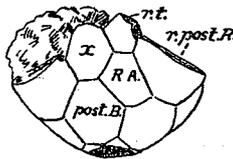


Fig. 2.



Fig. 3.

HYDREIONOCRINUS VERRUCOSUS.

Fig. 1.—The infrabasal circlelet, showing the stem-facet. $\times 2$ diam.

Fig. 2.—The cup from the posterior, showing the anal plates. Nat. size.

Fig. 3.—Part of the cup from the right anterior interradius, showing the notch on the shoulders of the radials.

in which presumably there rested an interbrachial (text-figure 3).

Measurements of Ant. R.—

Greatest width,	-	-	-	-	-	12.5 mm.
Width of facet,	-	-	-	-	-	10.9 mm.
Width below,	-	-	-	-	-	10.7 mm.
Height, to edge of lip,	-	-	-	-	-	6.6 mm.

The radial facet slopes upwards to the strongly marked fulcral ridge; its general appearance is much as in *Zeacrinus konincki* Bather (1912, text-figure 11).

The anal plates included in the cup and still preserved are—anal *x*, R.A.; and *rt.* (text-figure 2). Between anal *x* and l. post. R. is a notch, similar to those between other radials,

but slightly smaller, and, like them, indicating the presence of a plate. Anal x hexagonal, squarely truncate below where it rests on post. B., obliquely truncate above, where it supported a plate of the tube not preserved, but corresponding to that marked lt in Bather, 1912, text-figure 2. RA. pentagonal, abutting on r. post. B., post. B., r. post. R., x , and rt . rt . hexagonal, resting on RA., abutting by its sides on x and r. post. R. and the succeeding IBr., and supporting on its left shoulder the same tube-plate (lt) as was borne by x . This arrangement is precisely that of the genotype (see Bather, 1912, text-figure 2).

Stem unknown, but the characters of its proximal joint-face may be inferred from those of the Stem-facet. On the floor of this the IBB. meet round a minute lumen, the precise shape and size of which are indistinguishable. A roughly pentagonal area surrounding this lumen, to a distance of 1.3 mm. from the centre, appears somewhat rough, but devoid of regular ornament. Between this area and the margin of the excavation, each IB. is marked by ridges parallel to its median line, *i.e.*, to the radius. There are about ten of these ridges, with equal intervening grooves, to each IB., which is equivalent to a total width of 3.7 mm. (text-figure 1).

Relations of the Species.—From the genotype, *H. woodianus* De Koninck, this species differs in the equable surface of the cup-plates, those of *H. woodianus* being markedly tumid (Bather, 1912, text-figures 1 and 3).

In this character, as in the general shape, our species is reminiscent of *H. (?) phillipsianus* (De Kon. & Le Hon). But the original drawing of that species represents a specimen of almost circular outline, with the anal area slightly protruding rather than flattened (see Bather, 1912, text-figure 6). Anal x and rt in that species are said to be pentagonal. “Sa surface externe est entièrement lisse et n’offre pas la moindre trace de granulations” (De Koninck & Le Hon, 1854, pp. 88, 89). The measurements given indicate a proportionately higher cup, *viz.*, .5 of diameter as compared with .36 in our species.

The specimen from the Hurler Limestone of Roscobie (James Wright Colln. No. 441; Bather, 1912, pl. viii., fig. 6)

appears to have had a cup of the same general character as that of *H. woodianus*.

The specimen from Bed 3 at Inveriel (James Wright Colln. No. 727; Bather, 1912, pl. viii., figs. 7, 8) had a distinct granular ornament. Unfortunately the cup in that specimen is not well enough preserved for comparison with that from the Isle of Man.

Our specimen does not seem to agree with any specimen figured by Mr. James Wright (1914).

The presence of an interbrachial plate, if correctly inferred from the notch at the upper angles of the radials, distinguishes this species from those previously described, and even suggests a doubt as to its generic position. But, without further evidence, this need not be taken to outweigh the general characters of the cup and anal area, which agree most closely with *Hydreionocrinus*.

For works referred to, see list at end of the following paper on *Ulocrinus* (p. 218).